A Cost Analysis of egg Production in Alberta 1990

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A Cost Analysis of egg Production in Alberta 1990

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FOREWORD

Table eggs in Alberta are priced by C.E.M.A. using national estimates of production costs. The main objective of this study is to determine the cost of producing eggs in Alberta.

This report indicates that in 1990, it cost almost 93 cents to produce a dozen eggs in Alberta, up 8 cents from the cost in 1989. Returns exceeded costs by 4 cents per dozen eggs. Increases in almost every item of cost in 1990 were responsible for higher production costs. A lower equity level was responsible for higher interest costs, and slightly poorer feed conversion and productivity per bird contributed to higher feed costs.

As Alberta egg producers have no control over egg pricing, the primary concern of the Production Economics Branch is to provide these producers with information on the economics of egg production so that they can improve their productive efficiency. Producers can begin by comparing their egg enterprise with the provincial average. They can also compare their performance with the top management group. By improving productive efficiency, producers can cut costs and/or increase production, thereby increasing the profitability of the egg enterprise.

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ACKNOWLEDGEMENT

This report was prepared from farm records of a selected number of egg producers in Alberta who voluntarily participated in this project. Their participation was encouraged by the Alberta Egg Marketing Board.

Appreciation goes to each participating producer for his/her time and effort in providing the data. Allan Presiznuk from the Production Economics Branch collected and assisted with the computerization of the farm data.

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TABLE OF CONTENTS

	PAGE
FOREWORD	i
ACKNOWLEDGEMENTS	ii
LIST OF TABLES	iv
LIST OF FIGURES	iv
I. INTRODUCTION	1
II. METHOD OF ANALYSIS	2
III. DATA COLLECTION	4
IV. ANALYSIS OF THE RESULTS	6
Income	6
Variable Costs	6
Pullet Costs	6
Feed Costs	8
Labour Costs	8
Other Cash Expenses	8
Cost of Capital	9
Returns	10
Management	10
Management Profile	13
V. NATIONAL SURVEY	17
APPENDIX	18

LIST OF TABLES

TABLE		PAGE
1	ALTERNATIVE RETURNS	3
2	TABLE EGG COSTS AND RETURNS – 1990	7
3	RETURN TO CAPITAL	11
4	EXPECTED RETURN	11
5	PROFILE OF MANAGEMENT FACTORS FOR EGG PRODUCTION	14
6	ACCEPTABLE TOTAL DEBT LOAD PER BIRD	16

LIST OF FIGURES

FIGURE		PAGE
1	COST STRUCTURE SCHEMA	3
2	EGG PRODUCTION COST STRUCTURE	12

I. INTRODUCTION

The Canadian commercial table egg industry is controlled by the Canadian Egg Marketing Agency (CEMA). One of the objectives of CEMA is to establish an equitable price for commercial eggs in each province. To meet this objective, CEMA depends very heavily on a national cost of production study which the agency undertakes. The central focus of the national study is to establish the national production cost of eggs, and thus the national price.

Alberta Agriculture, along with the Alberta Egg Marketing Board, initiated a provincial cost study in 1983 to monitor the relation between the national cost and the provincial (Alberta) cost. This 1990 report is the summary of the eighth year of that study.

More specifically, the objectives of the study were:

- to provide an account of the costs and economic conditions encountered in the production of commercial eggs in Alberta;
- to analyze the present price efficiency in Alberta;
- to provide the participating producers with a personal economic analysis for management purposes; and
- to also provide data for Alberta Agriculture staff to use in extension education.

The provincial cost of production is a very useful economic indicator of performance of the industry in Alberta and can be used by the provincial egg marketing board in its dealings at the national level.

II. METHOD OF ANALYSIS

Many approaches may be used to estimate the cost of production on the farm. The approach taken in this study is to show the actual cost outlays, taken from the farm records for a given production year. A computer program is utilized to summarize the data and calculate the weighted averages.

There are two basic alternatives to estimating the economic well being of the farm enterprise. Alternative A determines the return to family labour, including the operator labour input; alternative B determines the return to equity invested in each particular enterprise. The methods, as identified in Table 1 are quite compatible, and in each case some major assumptions are made. In alternative A where the residual is return to family labour, an equity interest charge must be imputed in order to arrive at the total cost of production. The actual residual can then be measured in terms of dollars per hour of labour. On the other hand, using alternative B, the value of family labour must be imputed since there is usually no value attached to this input.

In this study, the principles of alternative B are used, i.e. the objective is to determine the percentage return to equity. The imputed value of family labour is included in the variable costs. This is more practical for a number of reasons: i) incorporated farms usually allocate total labour expenses, including family, ii) the inputed family labour expenses are real, considering money is used for living expenses during the year; iii) imputed interest, or opportunity cost on equity, used in alternative A, is a controversial issue in a period of persistent inflation or deflation of capital assets, and the value is difficult to estimate.

The charges for rent are included in the cost of capital. The capital cost in this context represents the cost of ownership of resources. If resources are rented there is a charge for their use; on the other hand, if resources are owned, the owner must bear the cost of depreciation and interest on debt. For group averages, classification into variable and capital cost is very suitable.

The cost summaries in this report are based on enterprise analysis. Namely, the expenses and income associated with a given enterprise are allocated from the total farm activities. Producers generally handle several enterprises on the same farm, therefore, allocating the appropriate outlays for each enterprise is not easy. Expenses such as utilities, fuel, etc. are purchased on a total farm basis and require a proper allocation for different uses. The egg enterprise is defined as all activity associated with the laying operation. In some cases the operator raises his own feed; the inputs of production are allocated to the egg enterprise and the total farm according to the actual use. Consequently, the final costs of producing eggs are the true costs associated only with egg production.

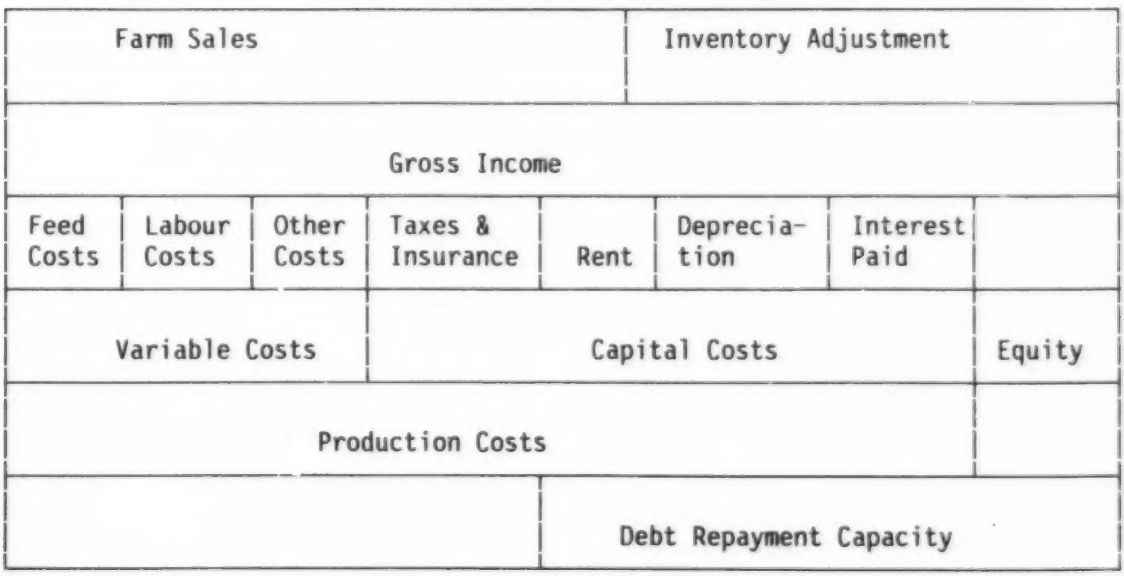
Where grading was reported, it was excluded for cost estimation and only the cost of ungraded eggs was assumed. Similarly, the actual cost associated with home raised pullets was not considered in

the layer operation; pullets were assumed to be purchased at market prices. The structure of returns and costs is shown schematically in Figure 1. The debt repayment capacity is equivalent to the capital costs excluding taxes and insurance.

TABLE 1: ALTERNATIVE RESULTS

A. LABOUR	B. CAPITAL
Gross Income	Gross Income
Feed	Feed
Other	Other
Hired Labour	Hired Labour
- - -	Family Labour (Imputed)
Variable Cost	Variable Cost
Rent	Rent
Depreciation	Depreciation
Paid Interest	Paid Interest
Equity Interest (Imputed)	- - -
Capital Cost	Capital Cost
Return to Family Labour	Return to Equity

FIGURE 1: COST STRUCTURE SCHEMA



III. DATA COLLECTION

In order to obtain necessary information from layer operations, all producers on the study were required to complete a detailed input form to report their egg production income and expenses, as well as an investment statement. This form is shown in Appendix A of this report.

The data were obtained through personal interviews with the participating producers. The information was then entered into the computer. The computer output, shown in Table 2, is supporting material for the analysis. Twenty-eight egg producers across the province submitted business information for the calendar year 1989.

Sample: Although the number of all egg producers in Alberta is not that large (231), it is not necessary to study the cost of every producer. A sample of forty producers was selected to be statistically sufficient to represent the total population of producers.

It was established that the standard deviation of the cost of producing eggs in the population of egg producers was 16¢ per dozen. The desired estimate of cost was assumed to be within 5¢.

The sample size was then determined by: [1]

$$n=\frac{4\times S^2}{L^2}$$

Where: n is sample size
S is standard deviation of population
L is expected accuracy of mean

---

1 The above equation was derived from:

(1) $S_x=\frac{S}{n}$

(2) $L=S_x\times t_{0.05}$

Where S_x is standard error of mean

$t_{0.05}$ is constant 1.96 from student's distribution table.

The study was designed to represent a cross-section of the producers by the size of bird quota. The provincial egg producers were arranged according to the quota size from smallest to largest in each area (6 areas are recognized). The sample was selected by systematic sampling to provide better representation of the population. The average quota, in terms of number of layers was 7,091 birds. Out of the sample of 30 producers, 23 completed reports for the 12-month period in 1990.

IV. ANALYSIS OF THE RESULTS

The cost and returns summary for the layer operation in Alberta in 1990 is shown in Table 2. The provincial average of 23 producers is shown on a per bird and per dozen eggs produced basis. This information was adopted for a specific use for the enterprise cost of production, and should not in any way be construed as income tax data or actual cash flow on a farm.

Income:

The majority of receipts from table egg farming is generated by the sale of commercial eggs through the grading station, as well as the private sale of eggs. The volume of sales for each producer is recorded by the Marketing Board for a levy imposition. This levy in 1990 amounted to 15.5¢ per dozen on all eggs sold. The blend price for the sample group, i.e. the price for all grades of farm eggs, was 112.21¢ per dozen in 1990. This is a gross price, without the deductions of levy and freight. The levy is not considered to be a cost of production item, but rather a reduction in price. However, the cost of freight, or cost of using trucks for egg hauling, is included in the cost of producing eggs. In 1990 there was an additional income of 0.8¢ per dozen from the sale of culled birds and other receipts pertinent to the egg operation. Gross income per dozen reached 97.50¢ in 1990, an increase of 0.34¢ over 1989.

Variable Costs:

Variable costs are made up of pullet costs, feed costs, labour costs and other non-capital cash expenses. This total category amounted to 80.0¢ per dozen or 85.8 per cent of total costs. A total of 82.1 per cent of income was used to cover variable costs. These costs vary with the volume of production. There was an increase of 6.0¢ per dozen over the variable costs in 1989.

Pullet Costs:

In the case of most farm studies, the hens are replenished every 52 weeks. The 52 week laying period coincides with the annual production period covered in this study. There is an indication that about 65 per cent of producers buy pullets while the remainder raise their own. While the cost of buying pullets is a cash outlay, the cost of farm raised pullets is estimated at the pullet's market price. This more than compensates the actual pullet cost on the farm. The estimated pullet price in 1990 was $3.50 per bird. The feed cost and other costs associated with raising pullets were thus not included for layer operations. The final average cost for buying one bird in 1990 was $3.50 and represents a cost of 16.7¢ per dozen eggs produced. The pullet cost accounted for 17.1 per cent of income, the second highest cost item after feed.

TABLE 2: TABLE EGGS COSTS AND RETURNS - 1990

				TOTAL DOLLARS	DOLLARS PER HEN	CENTS PER DOZEN
	EGG SALES	150,076.75	DOZEN	168,397.75	24.17	112.21
	SALES DEDUCTIONS			-23,225.95	-3.33	-15.48
	OTHER RECEIPTS			1,157.22	0.17	0.77
A.	**GROSS INCOME**			146,329.00	21.00	97.50
	PULLET COSTS	3.50	$/PULLET	25,006.61	3.59	16.66
	FEED COSTS	213.09	$/TONNE	62,027.61	8.90	41.33
	MEDICATION			492.17	0.07	0.33
	BARN SUPPLIES			611.43	0.09	0.41
	FREIGHT			1,036.13	0.15	0.69
	ENERGY			4,402.56	0.63	2.93
	MACHINERY & BUILDING REPAIRS			3,333.39	0.48	2.22
	OPERATING INTEREST			1,703.74	0.24	1.14
	OTHER EXPENSES			2,098.09	0.30	1.40
	HIRED LABOUR	683.83	HOURS	6,650.48	0.95	4.43
	FAMILY LABOUR	1,706.65	HOURS	12,730.39	1.83	8.48
	LABOUR COSTS	8.11	$/HOUR	19,380.86	2.78	12.91
B.	**TOTAL VARIABLE COSTS**			120,092.19	17.24	80.02
	INSURANCE & TAXES			1,438.3	0.21	0.96
	RENT					
	DEPRECIATION			13,748.95	1.97	9.16
	INTEREST (CAP. LOANS)	8.96	%	4,696.72	0.67	3.13
C.	**TOTAL CAPITAL COSTS**			19,883.97	2.85	13.25
D.	**PRODUCTION COSTS (B+C)**			139,976.25	20.09	93.27
	GROSS RETURN (A-B)			26,236.39	3.77	17.48
	RETURN TO EQUITY (A-D)	4.21	%	6,352.40	0.91	4.23
	INVESTMENT:					
	BUILDINGS 76.96%	13.36	YEARS	156,474.69	22.46	104.26
	MACHINERY 19.22%	10.45	YEARS	39,085.86	5.61	26.04
	LAND & SUPPLIES 3.82%			7,758.70	1.11	5.17
	TOTAL INVESTMENT:			203,319.25	29.18	135.48
	EQUITY	74.22	%	150,893.50	21.66	100.54
	DEBT	25.78	%	52,425.75	7.52	34.93
	MANAGEMENT:					
	YEARS FARMING	15				
	NUMBER OF FLOCKS	1.57				
	AVERAGE NUMBER OF LAYERS	6,966.90				
	PRODUCTIVITY	21.54	DOZEN			
	HOURS PER BIRD	0.34				
	FEED CONVERSION FACTOR	1.94	KG/DOZEN			
	CAPITAL TURN OVER	1.39	YEARS			
	MORTALITY PER CENT	5.51				

PRODUCTION ECONOMICS BRANCH, ALBERTA AGRICULTURE

Feed Costs:

The expenses for feed occupy the largest portion of the total cost for table egg farms. Spending on feed accounted for 42.4 per cent of income or 44.3 per cent of total production costs on layer farms, both higher than in 1989. Higher feed conversion ratios in 1990 were responsible for higher feed costs, despite reductions in the actual cost per tonne of feed.

The majority of producers, about 70 per cent, bought complete feed rations and the remainder used home grown grain mixed with supplement on the farm. The cost of feed was determined from each producer's feeding program where the quantity of each particular feed used in the layer operation was established. For purchased feed, the actual cash value was taken, while for home grown feed, the market value per tonne was applied to arrive at total feed cost.

For the sample group, the average feed conversion, or quantity of feed used in producing a dozen eggs was 1.94 kg, up from 1.79 kg in 1989. The average price of feed was $213.09 per tonne. Please note that this is a blend price of complete feed as well as home grown grain. The purchased complete ration price alone, including a delivery charge, was higher. The total feed cost amounted to $8.90 per bird, or 41.33¢ per dozen, up 2.25¢ from 1989.

Labour Costs:

The cost of labour consists of a value assigned to actual work performed for a layer operation. When more than one enterprise is present on the farm, it is important to properly allocate working time for the table egg operation only. Three types of labour are recognized in this study. These are operator, family unpaid labour, and hired labour. The cost of hired labour is the actual cash wages paid to hired workers. As the operator and other family members are usually not paid in such a way, the value of their work has to be estimated at the cost of labour in the poultry industry.

Operator and unpaid family labour rates used in the 1990 study were $8.20 and $4.50 per hour, respectively. The objective was to determine the actual labour cost in agriculture and not in other alternative opportunities. Some studies use an arbitrary value for management, however in this report the management is rewarded by the bottom line return (return to equity).

Due to the prevailing number of small farms, 343 hours of labour time was required for 1,000 birds per year. The total labour cost per dozen eggs was 12.9¢, which is approximately 13.2 per cent of the income. Hired labour accounted for 28.6 per cent of the total labour time.

Other Cash Expenses:

This cost category consists of various cost items such as medication, barn supplies, energy, machinery and building repairs, freight, interest on operating loans and other expenses. The value of these items is determined from actual cash outlays made by the operator during the year, and

appropriately allocated to the layer enterprise. In total, these expenses accounted for 9.11¢ per dozen eggs of 9.3 per cent of income. The most significant item was the cost for energy, followed by machinery and building repairs, together accounting for 56.6 per cent of this group total.

The operating interest of 1.14¢ per dozen is the actual cash outlay paid on outstanding operating loans during the year. This increased by 37¢ per dozen over 1989. Some other studies do not show the actual interest paid, but have estimated interest on working capital.

Cost of Capital:

The cost of capital is defined by the annual expenses associated with resource ownership. Depreciation, interest payments, insurance and taxes are all payments for resource ownership. Rent is included in this category because it is a form of payment for capital. The cost of capital has to be borne regardless of whether production is taking place or not, a major difference compared to variable costs.

The capital cost, which was 13.3¢ per dozen eggs, accounted for 13.6 per cent of income. It is important to keep down the proportion of capital cost to total cost because these expenses must be paid regardless of whether or not anything is produced. The more volume produced for a given investment, the less significant unit capital cost becomes. Capital costs increased by 2.7¢ per dozen eggs over 1989. This reflects a higher debt load in 1990.

The magnitude of the capital cost is dependent on the actual value of the assets. Depreciation is based on the original (purchased) value at the time of purchase; a 5 per cent rate was applied to buildings and 10 per cent on machinery.

In order to determine the current equity position on the farm, the original value was updated to the present by a net inflation index[1]. The value of equity was used in determining the current return on equity. The estimated current value of the investment on layer farms was $29.18 per bird. On average, 25.8 per cent of this value was financed and the rest (74.2%) was owner's equity. Invested equity was $21.66 per bird.

In 1989 only 16.5 per cent of investment was financed, reflecting a high proportion of communal farms with very low to zero debt. In 1990 the proportion of farms with debt was higher, producing a higher average debt for the sample. The blend interest paid for outstanding capital loans was 8.96 per cent.

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[1] The index for each item is determined by the ratio of inflation and depreciation rates. For instance, if the inflation rates of power machinery during some period is lower than the depreciation (10%), the calculated current market value will be lower than the original value. The decline in value through use (depreciation) is not fully offset by the inflation.

The building investment accounted for 77 per cent and machinery 19 per cent of total investment, respectively. The average age was 13.4 years on buildings and 10.5 years on machinery. For each dollar of invested capital 0.74 dozen eggs was produced. This is down from 0.94 dozen in 1989. Total production costs were 93.3¢ per dozen.

Returns:

The gross return is the return after variable costs have been deducted from the gross income. This return decreased from 23.2¢ per dozen in 1989 to 17.5¢ per dozen in 1990. The return to equity is the final residual left after all expenses are subtracted from the gross income. It is a measurement of the economic well being of the farm enterprise.

Table egg farms in 1990 averaged about $0.91 return per bird (down $1.89 from 1989). The return per dozen eggs fell from 12.7¢ in 1989 to 4.2¢ in 1990. This represents a 4.2 per cent return from invested equity, and showed a drop by 10.0 percentage points from 1989. In Table 3 a summary of the average investment and return situation of the sample producers is provided on a per bird basis.

Considering the alternative investment returns such as investment certificates, in 1990 the 4.2 per cent return on equity was not very favourable. A summary of the average or expected costs and returns is given in Table 4, with values for 1989 for comparison purposes. These are also shown graphically in Figure 2.

Management:

Management is concerned with the organizing, planning, directing and supervising of the farm. Table 2 shows some of the more important indicators of management. One very important indication of good management is bird productivity. Average productivity in Alberta from the surveyed participants was at the level of 21.5 dozen per bird, slightly down from 1989.

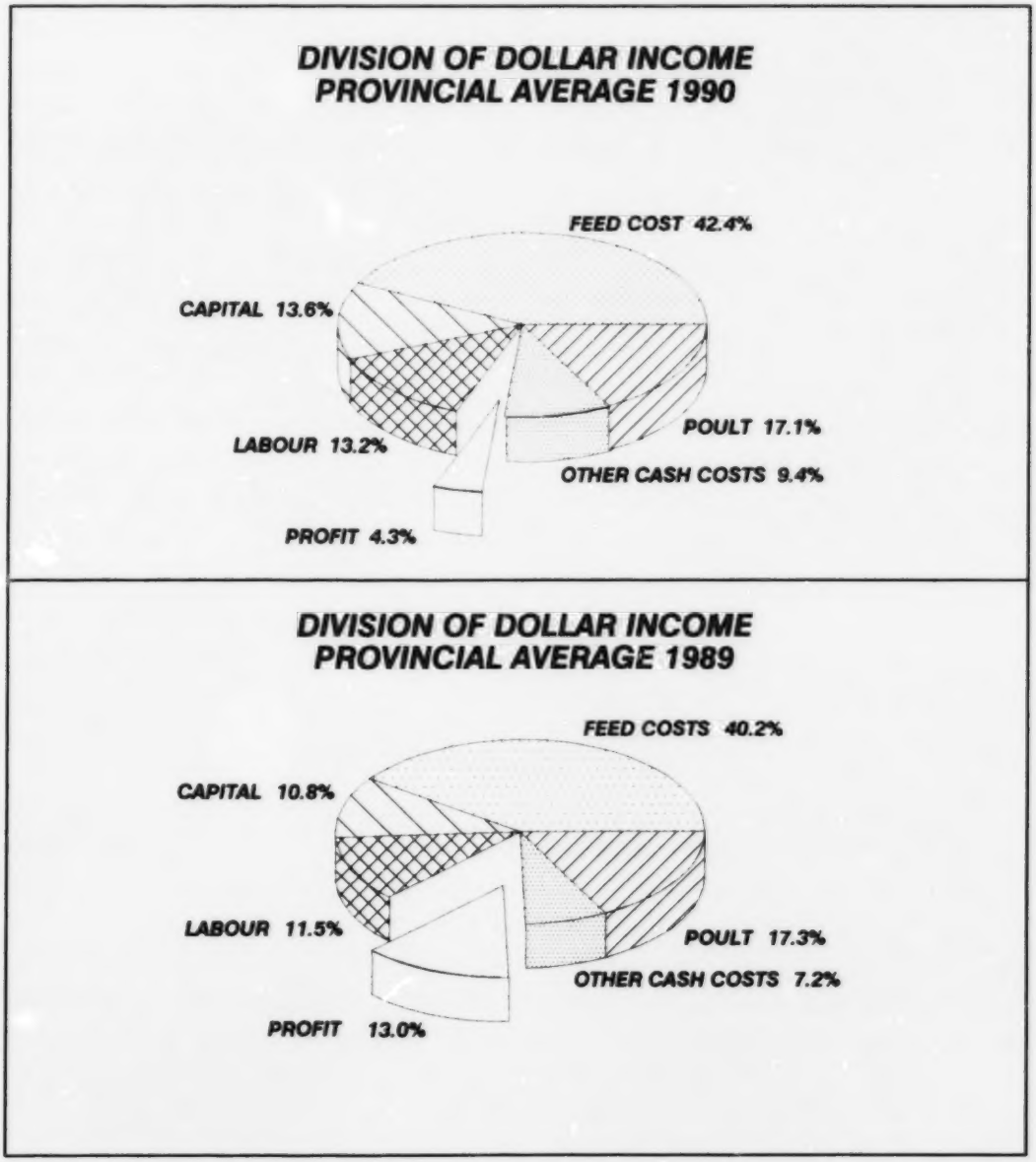
Feed, labour and capital efficiency are measured by feed conversion, hours per bird and capital turnover. The values achieved in 1990 for these resources were: 1.94 kg/dozen, 0.34 hours per bird and 1.39 years of capital turnover. The values for feed conversion and capital turnover were poorer than in 1989, labour efficiency was unchanged.

Another management indicator is flock mortality, which is expressed in terms of per cent loss from the layer quota number. The 1990 mortality was approximately 5.5 per cent, only 0.1 per cent different from 1989.

TABLE 3: RETURN TO CAPITAL		
	PER BIRD	
	1989	1990
Total Investment ($)	23.54	29.18
Debt ($)	3.89	7.52
Equity ($)	19.64	21.66
Paid Interest Rate (%)	8.8	9.0
Equity Interest Rate (%)	14.3	4.2
Profit Per Cent of Income (%)	13.0	4.3

TABLE 4: EXPECTED RETURN		
	¢ PER DOZEN	
	1989	1990
Blend Price	111.5	112.2
Bird Salvage Value	0.8	0.8
Levy	–15.2	–15.5
Gross Income	97.2	97.5
Pullet Cost	16.8	16.7
Feed Cost	39.1	41.3
Other Cash Costs	7.0	9.1
Labour Cost	11.2	12.91
Capital Cost	10.5	13.25
Total Cost	84.5	93.3
Return to Equity (¢)	12.6	4.2
Return to Equity (%)	14.3	4.2

FIG. 2: EGG PRODUCTION COST STRUCTURE



PRODUCTION ECONOMICS BRANCH, ALBERTA AGRICULTURE

The size of the layer operation is given by the average number of layers. This number is important for the calculation of values such as productivity, cost per bird, etc. Normally, the average number of layers is given by the beginning number plus the ending number divided by two. Considering the enforcement of the quota policies, the beginning number is officially equal to quota and the end number depends on death-loss. The calculation of the average number is complicated for the multiple flock farms. The allowed quota size is replenished several times during the year depending on the number of different flock ages. The average number for multiple flocks is higher and tends to be closer to the quota. The average number of layers can be determined using a formula when quota, mortality and number of flocks are given[1].

Using this formula, the quota for an average number of 6,967 layers, as indicated in Table 2, would be approximately 7,091 birds. The annual death-loss of 5.5 per cent corresponds to 384 birds.

Management Profile:

Every farm operator tries to make management decisions that maximize the return on his farm. In Table 5, we attempted to identify the values of some factors for the top 1/3 and bottom 1/3 groups. A cross-section of values of management factors is provided.

The top 1/3, first line, and bottom 1/3, second line, groups are set for each factor identified on the left hand side, the corresponding values of other factors are then calculated for these groupings. For instance, the top 1/3 group in number of birds had 12,668 birds, while the bottom 1/3 group had 2,824. The cost of production for the same two groups was 91.6 cents and 98.2 cents respectively. By similar reading, the whole interrelationship between several management factors can be identified. The overall level of management was determined by five key factors:

1. Productivity
2. Cost per dozen
3. Labour hours per bird
4. Feed by kg per dozen
5. Capital turnover in years

---

1 $A = Q \times 1 - \frac{m}{2F}$

Where: A average number of layers
Q quota number of birds
F number of flocks
m per cent mortality

TABLE 5: PROFILE OF MANAGEMENT FACTORS FOR EGG PRODUCTION(1)

TOP 1/3 BOTTOM 1/3 GROUPS FOR:	PRODUC-TIVITY DOZ/HEN	TOTAL COST C/DOZ	LABOUR HRS/BIRD	FEED KG/DOZ	CAPITAL TURNOVER YEARS	NO. OF BIRDS	YEARS IN POULTRY	EQUITY/ CAPITAL RATIO	MORTA-LITY %	RETURN TO EQUITY C/DOZ	OVERALL MGMT RATING
PRODUCTIVITY DOZ/HEN	23.48	88.04	0.44	1.79	1.3	7003	10.6	80.0	6.2	7.1	2.4
	19.66	112.80	0.40	2.21	1.8	8616	14.8	61.9	4.9	-15.1	1.4
TOTAL COST C/DOZ	22.76	74.12	0.26	1.80	0.8	8366	15.8	89.5	5.6	20.9	2.7
	20.24	117.64	0.54	2.26	1.9	8149	12.0	70.8	4.7	-21.1	1.3
LABOUR HRS/BIRD	21.77	84.95	0.21	1.96	1.0	8483	19.8	80.0	6.4	10.7	2.4
	21.53	111.21	0.64	2.01	1.9	7057	11.4	76.6	3.4	-16.2	1.4
FEED KG/DOZ	22.43	84.96	0.40	1.57	1.3	5144	17.5	86.2	4.6	10.0	2.4
	20.36	115.75	0.50	2.30	1.7	7332	15.0	65.2	5.5	-19.4	1.3
CAPITAL TURNOVER YEARS	22.36	74.53	0.26	1.72	0.8	7519	17.6	84.1	5.5	20.5	2.7
	21.45	108.56	0.47	1.90	2.2	7734	14.1	67.8	5.5	-12.5	1.6
NO. OF BIRDS	21.65	91.58	0.29	2.03	1.3	12668	13.0	76.4	6.2	7.9	2.2
	22.34	96.19	0.58	1.91	1.5	2624	13.3	91.1	3.4	-5.9	1.9
YEARS IN POULTRY	20.75	92.07	0.25	1.96	1.3	5867	24.0	80.0	5.4	3.3	2.1
	21.66	94.68	0.42	1.83	1.6	7035	7.1	59.0	4.7	0.6	2.0
EQUITY/CAPITAL RATIO	22.52	85.25	0.35	1.87	1.3	6284	19.5	100.0	4.2	7.6	2.3
	20.85	99.85	0.37	1.99	1.5	5635	14.4	39.4	5.1	-3.8	1.9
MORTALITY %	20.98	99.47	0.48	1.95	1.7	4733	11.4	70.1	1.9	-6.9	1.7
	21.28	99.97	0.33	2.06	1.5	6483	15.9	75.8	7.7	-2.9	2.0
RETURN TO EQUITY C/DOZ	22.76	74.12	0.26	1.80	0.8	8366	15.8	89.5	5.6	20.9	2.7
	20.72	117.37	0.61	2.20	2.0	5000	11.3	72.8	4.6	-22.5	1.4
OVERALL MGMT RATING	22.71	74.74	0.26	1.72	0.8	7960	17.3	84.1	5.4	19.9	2.7
	20.24	117.64	0.54	2.26	1.9	8149	12.0	70.8	4.7	-21.1	1.3
WEIGHTED PROV AVG	21.54	93.27	0.34	1.94	1.4	6967	15.0	74.2	5.5	4.2	2.0
TOP MGMT-PROV AVG %	5.2%	-24.6%	-28.9%	-12.9%	-75.1%	12.5%	13.0%	11.8%	-2.5%	76.8%	27.0%

(1) Each line contains values for the top 1/3 and bottom 1/3 group set by the left hand side factor. Overall management is a weighted average based on ratings of 1 to 3 for five key factors.

PRODUCTION ECONOMICS BRANCH, ALBERTA AGRICULTURE

The top 1/3 producers in each of these five categories were rated 3, the middle 1/3 were rated 2 and the bottom 1/3 were rated 1. The last column in Table 5 indicates a blend of 1, 2 and 3 for each factor, depending on whether that group had more top managers (closer to 3) or not.

Several conclusions can be derived from Table 5. The five key management factors are closely linked to each other. Producers in the top 1/3 productivity group had lower costs per dozen, a lower feed conversion ratio and a shorter capital turnover period than those in the bottom 1/3 productivity group. As expected, a similar relationship existed between the group with the highest overall management rating and the corresponding key management factors. This group also had a lower labour input per bird, higher equity – capital ratios and a higher return to equity. However, there was only a 5 year difference in the average number of years in poultry for these two groups, indicating that this factor did not have a great effect on overall management.

This is further confirmed by a comparison of the producers in the business longest (24 years) and those in the shortest (7 years), with overall management ratings of 2.1 and 2.0, respectively. The newer entrants had less equity (59% compared with 80%) and were larger than the most established producers. Both groups had positive returns to equity with the established group having a higher return on average.

The mortality rate factor seemed out of sinc with other management factors except feed conversion. The group with the lowest mortality rates tended to be smaller, had a higher labour input but only slightly better feed conversion than the group with the highest mortality rate. They had lower productivity rates but similar costs and, therefore lower returns to equity than the group with higher mortality rates.

The cost of production for the top 1/3 management group was better by 25 per cent (19¢ per dozen) than the provincial average, while the difference in productivity was negligible (at 5 per cent). However, the return to equity was 79 per cent higher for the top 1/3 group. (The provincial averages used in these comparisons are the weighted averages given in Table 2, the differences are even greater when the straight (unweighted) averages are used).

Table 6 illustrates the acceptable total debt load per bird at various levels of productivity and interest rates. The basic repayment capacity is given by gross return excluding insurance and taxes, i.e. money available for resource ownership payment, consisting of rent, depreciation, paid and equity interest. The three year average was $4.37 per bird based on an average productivity of 21.54 dozen per bird. This table should be used as a guideline only; each individual situation is different.

The repayment capacity varies with productivity, the three year average ranged from $1.56 to $5.40 per bird, with productivity ranging from 17 to 24 dozen per bird. It was assumed that feed cost would vary in proportion to productivity but other costs would remain constant within the range of productivity examined. The gross returns achievable would support loans at the low productivity, high interest rate situation of $9.13 per bird or just about 38% equity. As productivity increases or interest rates fall, the debt servicing capacity increases to $41.06 per bird. At the current level of investment per bird ($29.18), 100 per cent of ownership costs are covered at an average productivity of 22 dozen per bird, up to an interest rate of 12%. For higher rates of interest or higher levels of investment, higher productivity is required.

TABLE 6: ACCEPTABLE TOTAL DEBT LOAD PER BIRD

PRODUCTIVITY DOZEN/BIRD	ANNUAL PAYMENT* INTEREST RATE					
	10%	11%	12%	13%	14%	15%
17	11.88	11.23	10.63	10.09	9.59	9.13
19	20.21	19.11	18.10	17.17	16.32	15.54
20	24.38	23.05	21.83	20.72	19.69	18.74
22	32.72	30.93	29.30	27.80	26.42	25.15
24	41.06	38.82	36.77	34.88	33.16	31.57

* At a 15 year repayment period.

V. NATIONAL SURVEY

The national cost survey conducted under the auspices of CEMA differs in some areas from our provincial concept. Consequently, one must be careful in comparing the results.

First of all, the national sample is selected from the producers with 10,000 to 50,000 birds. Not many producers (less than 20 per cent) would qualify for this group in Alberta. Ironically, the absence of over base quota, and interprovincial quota transfer policies may well have curtailed the growth of larger enterprises in Alberta. The occurrence of excess capacity and the resulting higher capital cost are evident. The sample of producers from this large farm group does not represent the provincial mosaic. The fact is that the average size in Alberta is something in the neighbourhood of 6,000 birds.

In conducting cost surveys we have tried to avoid the use of imputed or estimated values as much as possible. Consequently, the final costs are true costs as they occur on the Alberta farms. The debt/equity ratio, labour hours and rates, interest on capital and working capital are actual values determined from the selected sample.

The final return to equity is a barometer of the industry's economic performance.

APPENDIX

TABLE EGGS

I. POULTRY FARM BUSINESS ANALYSIS 19__

Name: _____

Phone: _____

3	11	18	25	32	39	46	53	60	67	74
Town:	Buildings Used for Poultry								Poultry Equipment	
ORIGINAL VALUE										
POULTRY SHARE($) 02										
AGE 03										
	Poultry Equipment		Power Machinery Used for Poultry							
ORIGINAL VALUE										
POULTRY SHARE($) 04										
AGE 05										
	Non-Power Machinery Used for Poultry					Value of Land	Birds No. Quota	Mortality No.		
ORIGINAL VALUE						Site ac:___				
POULTRY SHARE($) 06										
AGE 07						Farm Receip.	Poult.Rec%	Years Farm.	No.ofFlocks	
	Outstanding Loans on:				Poultry Receipts					
	Land	Buildings	Machinery	Other Cap.	Eggs					
VALUE										
POULTRY SHARE($) 08										
INTEREST RATE 09					Quantity (Doz.)					

11.

	3	11	18	25	32	39	46	53	60	67	74
		Private Sales		Other	($)	($)	Bird Sales		Pullet Purchases		Operating
		No.	Value	Receipts	Board Fees	Freight	No.	Value	No.	Value	Interest($)
TOTAL FARM		unit:									
POULTRY SHARE($)	10										
		Medication Cost	Barn Supplies	Utilities	Fuel, Oil Grease	Machinery Repairs	Building Repairs	Insurances Taxes	Custom Work	Cash Rent	Other Expenses
TOTAL FARM											
POULTRY SHARE($)	11.										
		Grain Feed			Rations and Supplements					Other Feed	
		Barley			Starter						
QUANTITY FED per DAY (kg)											
NO. of DAYS (Cycle)											
TOTAL TONNES	12.										
PURCHASE PRICE	13.										
HOME GROWN PRICE*	14.										
		Operator	Hired Paid Labour				Unpaid Family Labour				
POULTRY CHORES (hours/day)											
NO. of DAYS											
POULTRY HOURS	15										
WAGES INCLUDING BOARD	16	per Hour*					per Hour*				

*Office Use